

SEQUENCE LISTING

<110> Lynglev, Gitte Budolfson  
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Heldt-Hansen, Hans Peter  
Stringer, Mary Ann  
Lange, Lene

<120> Method of Preparing a Heat-Treated Product

<130> 10347.204-US

<160> 15

<170> PatentIn version 3.3

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cca aac gtc act atc ttc gcg aca ggc ggc aca atc gcg ggc tcc agc      249
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Ala Gly Val Gln Val Thr Asn Val Gly Ser Pro Asp Ile Thr Ser Asp

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ccc acc atg gcc ggt gca gtg gtc acc cac ggc acc gac acg ctc gaa Pro Thr Met Ala Gly Ala Val Val Thr His Gly Thr Asp Thr Leu Glu	135	140	145	489
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Gly Ser Ser Ala Asp Asn Thr Ala Thr Thr Gly Tyr Lys Ala Gly Ala  
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Cys Asn Asp Pro Thr Met Ala Gly Ala Val Val Thr His Gly Thr Asp  
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Pro Lys Ala Arg Asp Arg Gly Ala Leu Ile Val Met Asn Asp Arg Ile  
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Phe Lys Ala Ile Glu Met Gly Asn Leu Gly Glu Val Val Ser Asn Lys  
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Asp Ile Arg Asn Ile Thr Ser Ile Pro Arg Val Asp Ile Leu Tyr Ser  
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Tyr Glu Asp Met His Asn Asp Thr Leu Tyr Ser Ala Ile Asp Asn Gly  
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Ala Lys Gly Ile Val Ile Ala Gly Ser Gly Ser Gly Ser Val Ser Thr  
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Pro Phe Ser Ala Ala Met Glu Asp Ile Thr Thr Lys His Asn Ile Pro  
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Ile Val Ala Ser Thr Arg Thr Gly Asn Gly Glu Val Pro Ser Ser Ala  
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Glu Ser Ser Gln Ile Ala Ser Gly Tyr Leu Asn Pro Ala Lys Ser Arg  
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Ala Val Ala Ala Leu Ala Thr Leu Ser Gln Ala Ser Pro Val Leu Tyr  
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act cgc gag gac act acc tcc aac aca acc tac gcc ttt acc aac agc 208  
Thr Arg Glu Asp Thr Thr Ser Asn Thr Thr Tyr Ala Phe Thr Asn Ser  
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Gly Gly Thr Ile Ala Gly  
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Gly Ile Gln Thr Leu Ile Asp Ala Val Pro Glu Met Leu Ser Val Ala  
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Asp Thr Leu Glu Glu Thr Ala Phe Phe Leu Asp Ala Thr Val Asn Cys  
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Gly Lys Pro Ile Val Ile Val Gly Ala Met Arg Pro Ala Thr Phe Ile  
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Ser Ala Asp Gly Pro Tyr Asn Leu Leu Gln Ala Val Thr Val Ala Ser  
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Thr Phe Lys Ala Val Glu Met Gly Tyr Leu Gly Ala Ile Ile Ser Asn  
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Thr Pro Phe Phe Tyr Tyr Pro Ala Val Gln Pro Ser Gly Lys Thr Thr  
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Val Asp Val Ser Asn Val Thr Ser Ile Pro Arg Val Asp Ile Leu Tyr  
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Ser Phe Gln Asp Met Thr Asn Asp Thr Leu Tyr Ser Ser Ile Glu Asn  
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Gly Ala Lys Gly Val Val Ile Ala Gly Ser Gly Ala Gly Ser Val Asp  
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Thr Ala Phe Ser Thr Ala Ile Asp Asp Ile Ile Ser Asn Gln Gly Val  
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Pro Ile Val Gln Ser Thr Arg Thr Gly Asn Gly Glu Val Pro Tyr Ser  
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Ala Glu Gly Gly Ile Ser Ser Gly Phe Leu Asn Pro Ala Lys Ser Arg  
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Gly Lys Pro Ile Val Val Val Gly Ala Met Arg Pro Ala Thr Ala Ile  
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His Pro Thr Ala Arg Asn Arg Gly Ala Leu Val Val Met Asn Asp Arg  
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Ile Val Ser Ala Tyr Tyr Val Ser Lys Thr Asn Ala Asn Thr Met Asp  
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Thr Phe Lys Ala Val Glu Met Gly Asn Leu Gly Ala Ile Ile Ser Asn  
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Ile Glu Ser Gly Phe Leu Asn Pro Gln Lys Ala Arg Ile Leu Leu Gly  
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 Met Ser Pro Ser  
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 25 30 35  
 gtt ggt gac ttt gag tgc ttc aac gct agt ctt ccc aac atc acc atc 260  
 Val Gly Asp Phe Glu Cys Phe Asn Ala Ser Leu Pro Asn Ile Thr Ile  
 40 45 50  
 ttc gcg act ggt ggt acc atc gct ggt tct gct ggt tct gcc gat cag 308  
 Phe Ala Thr Gly Gly Thr Ile Ala Gly Ser Ala Gly Ser Ala Asp Gln  
 55 60 65  
 act acg ggt tac cag gct ggt gca ttg ggt atc caa gcg ttg atc gac 356  
 Thr Thr Gly Tyr Gln Ala Gly Ala Leu Gly Ile Gln Ala Leu Ile Asp  
 70 75 80  
 gct gtc ccg caa ctc tgc aac gtc tcc aac gtc agg ggt gtg cag atc 404  
 Ala Val Pro Gln Leu Cys Asn Val Ser Asn Val Arg Gly Val Gln Ile  
 85 90 95 100  
 gcc aac gtt gat agc ggc gat gta aac tct act atc ctg acc act ttg 452  
 Ala Asn Val Asp Ser Gly Asp Val Asn Ser Thr Ile Leu Thr Thr Leu  
 105 110 115  
 gcg cat cgc atc cag act gat ctt gac aac cct cac atc caa ggt gtt 500  
 Ala His Arg Ile Gln Thr Asp Leu Asp Asn Pro His Ile Gln Gly Val  
 120 125 130  
 gtc gtc acc cat ggc aca gac act ctc gag gag tct tca ttt ttc ctc 548  
 Val Val Thr His Gly Thr Asp Thr Leu Glu Glu Ser Ser Phe Phe Leu  
 135 140 145  
 gat ctc act gtc caa agt gaa aag cct gtt gtt atg gtt gga tcc atg 596

Asp	Leu	Thr	Val	Gln	Ser	Glu	Lys	Pro	Val	Val	Met	Val	Gly	Ser	Met	
150						155					160					
cgt	cct	gcc	act	gcc	atc	agc	gct	gat	ggc	ccc	atc	aac	ctc	ctg	tct	644
Arg	Pro	Ala	Thr	Ala	Ile	Ser	Ala	Asp	Gly	Pro	Ile	Asn	Leu	Leu	Ser	
165					170					175					180	
gct	gtt	cga	ttg	gca	ggc	agc	aag	agt	gcc	aag	ggc	cgc	ggc	aca	atg	692
Ala	Val	Arg	Leu	Ala	Gly	Ser	Lys	Ser	Ala	Lys	Gly	Arg	Gly	Thr	Met	
				185					190					195		
att	gta	ctc	aac	gac	aag	atc	gct	tct	gca	cgc	tac	acc	gtt	aaa	tcc	740
Ile	Val	Leu	Asn	Asp	Lys	Ile	Ala	Ser	Ala	Arg	Tyr	Thr	Val	Lys	Ser	
			200					205					210			
cac	gcc	aat	gct	gtc	cag	act	ttc	att	gcc	gaa	gat	caa	ggc	tat	ctt	788
His	Ala	Asn	Ala	Val	Gln	Thr	Phe	Ile	Ala	Glu	Asp	Gln	Gly	Tyr	Leu	
		215					220					225				
ggc	gcc	ttt	gaa	aac	att	cag	ccc	gtc	ttc	tgg	tac	cct	gct	agt	cga	836
Gly	Ala	Phe	Glu	Asn	Ile	Gln	Pro	Val	Phe	Trp	Tyr	Pro	Ala	Ser	Arg	
	230					235					240					
cca	cta	ggc	cac	cac	tat	ttc	aac	att	agt	gct	agc	tca	cct	aag	aag	884
Pro	Leu	Gly	His	His	Tyr	Phe	Asn	Ile	Ser	Ala	Ser	Ser	Pro	Lys	Lys	
245					250					255					260	
gct	ctt	cct	cag	gtt	gac	gtt	ttg	tac	ggc	cac	caa	gaa	gcg	gac	ccc	932
Ala	Leu	Pro	Gln	Val	Asp	Val	Leu	Tyr	Gly	His	Gln	Glu	Ala	Asp	Pro	
				265					270					275		
gag	ctt	ttc	caa	gct	gct	gtc	gat	agc	ggc	gcc	cag	ggc	att	gtt	ctc	980
Glu	Leu	Phe	Gln	Ala	Ala	Val	Asp	Ser	Gly	Ala	Gln	Gly	Ile	Val	Leu	
			280					285					290			
gct	ggc	ctt	ggc	gct	gga	ggc	tgg	cct	gac	gaa	gct	gct	gat	gag	atc	1028
Ala	Gly	Leu	Gly	Ala	Gly	Gly	Trp	Pro	Asp	Glu	Ala	Ala	Asp	Glu	Ile	
		295					300					305				
aag	aag	gtc	ttg	aac	gag	act	aac	att	cct	gtt	gtt	gtc	agc	cgt	cgt	1076
Lys	Lys	Val	Leu	Asn	Glu	Thr	Asn	Ile	Pro	Val	Val	Val	Ser	Arg	Arg	
	310					315					320					
act	gct	tgg	ggc	tac	gtt	gga	gag	agg	cct	ttc	ggc	atc	ggc	gct	ggg	1124
Thr	Ala	Trp	Gly	Tyr	Val	Gly	Glu	Arg	Pro	Phe	Gly	Ile	Gly	Ala	Gly	
325					330					335					340	
tac	ttg	aac	cct	tcc	aag	gcc	aga	atc	caa	ctg	caa	ctt	gcg	ctt	gag	1172
Tyr	Leu	Asn	Pro	Ser	Lys	Ala	Arg	Ile	Gln	Leu	Gln	Leu	Ala	Leu	Glu	
				345					350					355		
aag	aag	ctt	tct	gtg	gag	gag	atc	caa	gac	ata	ttc	gag	tat	gtt		1217
Lys	Lys	Leu	Ser	Val	Glu	Glu	Ile	Gln	Asp	Ile	Phe	Glu	Tyr	Val		
		360						365				370				
tgattggaag	aggattttga	aatgaatcaa	tgatatatga	tta												1260

<210> 8  
 <211> 371  
 <212> PRT  
 <213> Fusarium graminearum

<400> 8

Met	Ser	Pro	Ser	Phe	His	Ser	Leu	Leu	Ala	Ile	Ala	Thr	Leu	Ala	Gly
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Ser	Ala	Ala	Leu	Ala	Ser	Pro	Ile	Pro	Glu	Pro	Glu	Thr	Pro	Gln	Leu
			20					25					30		
Ile	Pro	Arg	Ala	Val	Gly	Asp	Phe	Glu	Cys	Phe	Asn	Ala	Ser	Leu	Pro
		35					40					45			
Asn	Ile	Thr	Ile	Phe	Ala	Thr	Gly	Gly	Thr	Ile	Ala	Gly	Ser	Ala	Gly
	50					55					60				
Ser	Ala	Asp	Gln	Thr	Thr	Gly	Tyr	Gln	Ala	Gly	Ala	Leu	Gly	Ile	Gln
65					70					75					80
Ala	Leu	Ile	Asp	Ala	Val	Pro	Gln	Leu	Cys	Asn	Val	Ser	Asn	Val	Arg
			85						90					95	
Gly	Val	Gln	Ile	Ala	Asn	Val	Asp	Ser	Gly	Asp	Val	Asn	Ser	Thr	Ile
			100					105					110		
Leu	Thr	Thr	Leu	Ala	His	Arg	Ile	Gln	Thr	Asp	Leu	Asp	Asn	Pro	His
		115					120					125			
Ile	Gln	Gly	Val	Val	Val	Thr	His	Gly	Thr	Asp	Thr	Leu	Glu	Glu	Ser
	130					135					140				
Ser	Phe	Phe	Leu	Asp	Leu	Thr	Val	Gln	Ser	Glu	Lys	Pro	Val	Val	Met
145					150					155					160
Val	Gly	Ser	Met	Arg	Pro	Ala	Thr	Ala	Ile	Ser	Ala	Asp	Gly	Pro	Ile
				165					170					175	
Asn	Leu	Leu	Ser	Ala	Val	Arg	Leu	Ala	Gly	Ser	Lys	Ser	Ala	Lys	Gly
			180					185						190	
Arg	Gly	Thr	Met	Ile	Val	Leu	Asn	Asp	Lys	Ile	Ala	Ser	Ala	Arg	Tyr

195	200	205
Thr Val Lys Ser His Ala Asn Ala Val Gln Thr Phe Ile Ala Glu Asp		
210	215	220
Gln Gly Tyr Leu Gly Ala Phe Glu Asn Ile Gln Pro Val Phe Trp Tyr		
225	230	235
Pro Ala Ser Arg Pro Leu Gly His His Tyr Phe Asn Ile Ser Ala Ser		
245	250	255
Ser Pro Lys Lys Ala Leu Pro Gln Val Asp Val Leu Tyr Gly His Gln		
260	265	270
Glu Ala Asp Pro Glu Leu Phe Gln Ala Ala Val Asp Ser Gly Ala Gln		
275	280	285
Gly Ile Val Leu Ala Gly Leu Gly Ala Gly Gly Trp Pro Asp Glu Ala		
290	295	300
Ala Asp Glu Ile Lys Lys Val Leu Asn Glu Thr Asn Ile Pro Val Val		
305	310	315
Val Ser Arg Arg Thr Ala Trp Gly Tyr Val Gly Glu Arg Pro Phe Gly		
325	330	335
Ile Gly Ala Gly Tyr Leu Asn Pro Ser Lys Ala Arg Ile Gln Leu Gln		
340	345	350
Leu Ala Leu Glu Lys Lys Leu Ser Val Glu Glu Ile Gln Asp Ile Phe		
355	360	365
Glu Tyr Val		
370		

<210> 9  
 <211> 1470  
 <212> DNA  
 <213> Fusarium graminearum

<220>  
 <221> CDS  
 <222> (77)..(1429)



<400> 9  
aggacaagcg tccatgaagc ataactacgc tacattgcct ttagctacag ttgatctata 60  
gatatcagtc tacatc atg atg ccc agc gtc aga aga ttt cac ggc cag act 112  
Met Met Pro Ser Val Arg Arg Phe His Gly Gln Thr  
1 5 10  
atg gtc gcc gcc gct cct tct att tgc tca ggg cct gca gca tcg tcc 160  
Met Val Ala Ala Ala Pro Ser Ile Cys Ser Gly Pro Ala Ala Ser Ser  
15 20 25  
acc atc aag atg gct tca tcg tca gct tcg tgg acg act tat ctg tgg 208  
Thr Ile Lys Met Ala Ser Ser Ser Ala Ser Trp Thr Thr Tyr Leu Trp  
30 35 40  
cgg ctt atc cta gct gtg ctg gct cct tca acg gcc ctg ctg cct ttt 256  
Arg Leu Ile Leu Ala Val Leu Ala Pro Ser Thr Ala Leu Leu Pro Phe  
45 50 55 60  
ggg gcg tgg gtt gtt tcg gtc tgg gga tct cct gtc ctc gac cta cac 304  
Gly Ala Trp Val Val Ser Val Trp Gly Ser Pro Val Leu Asp Leu His  
65 70 75  
gtc caa cct cac ttc tcg gtt caa caa aaa gcg cca ata cag acg ggc 352  
Val Gln Pro His Phe Ser Val Gln Gln Lys Ala Pro Ile Gln Thr Gly  
80 85 90  
atc cct ttc gaa att tcg acc acc tca gga ttc aac tgc ttc aat ccc 400  
Ile Pro Phe Glu Ile Ser Thr Thr Ser Gly Phe Asn Cys Phe Asn Pro  
95 100 105  
aat ctt ccc aac gtc act att tat gcc acc gga ggt act att gct ggc 448  
Asn Leu Pro Asn Val Thr Ile Tyr Ala Thr Gly Gly Thr Ile Ala Gly  
110 115 120  
tcc gca agc tcg gct gat cag acc acg gga tac cgg tca gct gcg tta 496  
Ser Ala Ser Ser Ala Asp Gln Thr Thr Gly Tyr Arg Ser Ala Ala Leu  
125 130 135 140  
gga gtt gat tct ctc att gat gca gta ccc caa ttg tgc aat gta gcc 544  
Gly Val Asp Ser Leu Ile Asp Ala Val Pro Gln Leu Cys Asn Val Ala  
145 150 155  
aat gtg aga ggt gtc cag ttt gcc aac acg gac agc ata gac atg agc 592  
Asn Val Arg Gly Val Gln Phe Ala Asn Thr Asp Ser Ile Asp Met Ser  
160 165 170  
tcg gcc atg ttg agg act ttg gcg aag cag atc cag aat gat ctg gac 640  
Ser Ala Met Leu Arg Thr Leu Ala Lys Gln Ile Gln Asn Asp Leu Asp  
175 180 185  
agt ccg ttt act caa ggc gca gtt gtg acg cac gga act gat act ctg 688  
Ser Pro Phe Thr Gln Gly Ala Val Val Thr His Gly Thr Asp Thr Leu  
190 195 200  
gat gaa tct gcc ttc ttt ctg gat ctt act atc cag agc gac aag ccc 736  
Asp Glu Ser Ala Phe Phe Leu Asp Leu Thr Ile Gln Ser Asp Lys Pro

205	210	215	220	
gtg gtc gtg aca ggc tca atg cgc ccg gca act gct atc agc gca gat				784
Val Val Val Thr Gly Ser Met Arg Pro Ala Thr Ala Ile Ser Ala Asp	225	230	235	
gga cca atg aat ctt ttg tca tcg gtg aca ttg gca gca gca gcg agt				832
Gly Pro Met Asn Leu Leu Ser Ser Val Thr Leu Ala Ala Ala Ala Ser	240	245	250	
gct cga ggc aga gga gtg atg att gcc atg aat gat cgc att gga tct				880
Ala Arg Gly Arg Gly Val Met Ile Ala Met Asn Asp Arg Ile Gly Ser	255	260	265	
gct cgt ttt acg acc aaa gtc aac gcc aac cat ttg gac gcc ttc caa				928
Ala Arg Phe Thr Thr Lys Val Asn Ala Asn His Leu Asp Ala Phe Gln	270	275	280	
gcc cct gac agt ggc atg ctg gga aca ttc gtc aac gtt cag cca gtg				976
Ala Pro Asp Ser Gly Met Leu Gly Thr Phe Val Asn Val Gln Pro Val	285	290	295	300
ttt ttc tat ccg cca tca cga cct ctt ggc cac cgt cat ttt gat ctg				1024
Phe Phe Tyr Pro Pro Ser Arg Pro Leu Gly His Arg His Phe Asp Leu	305	310	315	
cgg ccc atc acc aac aac ggc cgc cgg ttc gga cgc tct aca gcc ccc				1072
Arg Pro Ile Thr Asn Asn Gly Arg Arg Phe Gly Arg Ser Thr Ala Pro	320	325	330	
gga gca gga tca tca gca cta ccc cag gtg gac gtg ctc tac gct tac				1120
Gly Ala Gly Ser Ser Ala Leu Pro Gln Val Asp Val Leu Tyr Ala Tyr	335	340	345	
cag gag ctc agc gtg ggc atg ttc cag gcg gcc atc gac ctt gga gcg				1168
Gln Glu Leu Ser Val Gly Met Phe Gln Ala Ala Ile Asp Leu Gly Ala	350	355	360	
cag ggc atc gtt cta gcg gga atg ggc gct gga ttc tgg acg tcc aaa				1216
Gln Gly Ile Val Leu Ala Gly Met Gly Ala Gly Phe Trp Thr Ser Lys	365	370	375	380
ggg acc gag gag att cgg cgt atc gtc cac gag acc gat att ccc gtg				1264
Gly Thr Glu Glu Ile Arg Arg Ile Val His Glu Thr Asp Ile Pro Val	385	390	395	
ata gtg agc cga aga ccg gaa ggc ggc ttc gtc gga cca tgt gag gca				1312
Ile Val Ser Arg Arg Pro Glu Gly Gly Phe Val Gly Pro Cys Glu Ala	400	405	410	
gga atc ggc gcg ggc ttt ttg aat ccg caa aag gcg agg atc cag ctc				1360
Gly Ile Gly Ala Gly Phe Leu Asn Pro Gln Lys Ala Arg Ile Gln Leu	415	420	425	
caa ctg gcc ctg gag acc aag atg gac aat gat gcc atc aaa gcc ctg				1408
Gln Leu Ala Leu Glu Thr Lys Met Asp Asn Asp Ala Ile Lys Ala Leu	430	435	440	

ttt gag cat tcg gga gtg cac taaagggaca aaaaagatcg aggttacagc 1459  
Phe Glu His Ser Gly Val His  
445 450

agcaacacca c 1470

<210> 10  
<211> 451  
<212> PRT  
<213> *Fusarium graminearum*

<400> 10

Met Met Pro Ser Val Arg Arg Phe His Gly Gln Thr Met Val Ala Ala  
1 5 10 15

Ala Pro Ser Ile Cys Ser Gly Pro Ala Ala Ser Ser Thr Ile Lys Met  
20 25 30

Ala Ser Ser Ser Ala Ser Trp Thr Thr Tyr Leu Trp Arg Leu Ile Leu  
35 40 45

Ala Val Leu Ala Pro Ser Thr Ala Leu Leu Pro Phe Gly Ala Trp Val  
50 55 60

Val Ser Val Trp Gly Ser Pro Val Leu Asp Leu His Val Gln Pro His  
65 70 75 80

Phe Ser Val Gln Gln Lys Ala Pro Ile Gln Thr Gly Ile Pro Phe Glu  
85 90 95

Ile Ser Thr Thr Ser Gly Phe Asn Cys Phe Asn Pro Asn Leu Pro Asn  
100 105 110

Val Thr Ile Tyr Ala Thr Gly Gly Thr Ile Ala Gly Ser Ala Ser Ser  
115 120 125

Ala Asp Gln Thr Thr Gly Tyr Arg Ser Ala Ala Leu Gly Val Asp Ser  
130 135 140

Leu Ile Asp Ala Val Pro Gln Leu Cys Asn Val Ala Asn Val Arg Gly  
145 150 155 160

Val Gln Phe Ala Asn Thr Asp Ser Ile Asp Met Ser Ser Ala Met Leu  
165 170 175

Arg Thr Leu Ala Lys Gln Ile Gln Asn Asp Leu Asp Ser Pro Phe Thr  
 180 185 190

Gln Gly Ala Val Val Thr His Gly Thr Asp Thr Leu Asp Glu Ser Ala  
 195 200 205

Phe Phe Leu Asp Leu Thr Ile Gln Ser Asp Lys Pro Val Val Val Thr  
 210 215 220

Gly Ser Met Arg Pro Ala Thr Ala Ile Ser Ala Asp Gly Pro Met Asn  
 225 230 235 240

Leu Leu Ser Ser Val Thr Leu Ala Ala Ala Ala Ser Ala Arg Gly Arg  
 245 250 255

Gly Val Met Ile Ala Met Asn Asp Arg Ile Gly Ser Ala Arg Phe Thr  
 260 265 270

Thr Lys Val Asn Ala Asn His Leu Asp Ala Phe Gln Ala Pro Asp Ser  
 275 280 285

Gly Met Leu Gly Thr Phe Val Asn Val Gln Pro Val Phe Phe Tyr Pro  
 290 295 300

Pro Ser Arg Pro Leu Gly His Arg His Phe Asp Leu Arg Pro Ile Thr  
 305 310 315 320

Asn Asn Gly Arg Arg Phe Gly Arg Ser Thr Ala Pro Gly Ala Gly Ser  
 325 330 335

Ser Ala Leu Pro Gln Val Asp Val Leu Tyr Ala Tyr Gln Glu Leu Ser  
 340 345 350

Val Gly Met Phe Gln Ala Ala Ile Asp Leu Gly Ala Gln Gly Ile Val  
 355 360 365

Leu Ala Gly Met Gly Ala Gly Phe Trp Thr Ser Lys Gly Thr Glu Glu  
 370 375 380

Ile Arg Arg Ile Val His Glu Thr Asp Ile Pro Val Ile Val Ser Arg  
 385 390 395 400

Arg Pro Glu Gly Gly Phe Val Gly Pro Cys Glu Ala Gly Ile Gly Ala  
 405 410 415

Gly Phe Leu Asn Pro Gln Lys Ala Arg Ile Gln Leu Gln Leu Ala Leu  
 420 425 430

Glu Thr Lys Met Asp Asn Asp Ala Ile Lys Ala Leu Phe Glu His Ser  
 435 440 445

Gly Val His  
 450

<210> 11  
 <211> 1236  
 <212> DNA  
 <213> Penicillium citrinum

<220>  
 <221> CDS  
 <222> (16)..(1152)

<400> 11  
 acatattgaa acaat atg aga ctt cta ttt aat act ctg gct gtc tca gca 51  
 Met Arg Leu Leu Phe Asn Thr Leu Ala Val Ser Ala  
 1 5 10

cta gct gct acg agt tat gcc tct ccc atc att cat tcc cgg gcc tcc 99  
 Leu Ala Ala Thr Ser Tyr Ala Ser Pro Ile Ile His Ser Arg Ala Ser  
 15 20 25

aac acg tcc tat acc aac tct aat ggg ctg aaa ttt aac cat ttc gac 147  
 Asn Thr Ser Tyr Thr Asn Ser Asn Gly Leu Lys Phe Asn His Phe Asp  
 30 35 40

gct tct ctt cca aat gtg act ttg ctg gca act ggt gga act att gcc 195  
 Ala Ser Leu Pro Asn Val Thr Leu Leu Ala Thr Gly Gly Thr Ile Ala  
 45 50 55 60

ggt aca agc gat gac aag act gct acg gca gga tat gaa tcc ggg gct 243  
 Gly Thr Ser Asp Asp Lys Thr Ala Thr Ala Gly Tyr Glu Ser Gly Ala  
 65 70 75

tta ggg ata aat aag att ctt tcc ggc atc cca gaa gtt tat gac att 291  
 Leu Gly Ile Asn Lys Ile Leu Ser Gly Ile Pro Glu Val Tyr Asp Ile  
 80 85 90

gcc aac gtc aat gcg gta cag ttt gac aat gtc aac agc ggc gat gtc 339  
 Ala Asn Val Asn Ala Val Gln Phe Asp Asn Val Asn Ser Gly Asp Val  
 95 100 105

tct yca tct ctc tta ctg aac atg aca cat acc ctt caa aag acc gtt 387

Ser	Xaa	Ser	Leu	Leu	Leu	Asn	Met	Thr	His	Thr	Leu	Gln	Lys	Thr	Val		
110						115					120						
tgt	gat	gac	cct	acg	ata	tct	ggc	gcc	gtc	atc	acc	cat	ggc	acc	gat	435	
Cys	Asp	Asp	Pro	Thr	Ile	Ser	Gly	Ala	Val	Ile	Thr	His	Gly	Thr	Asp		
125					130					135					140		
acc	ctg	gaa	gaa	tct	gcc	ttc	ttc	atc	gat	gca	aca	gtc	aac	tgc	ggc	483	
Thr	Leu	Glu	Glu	Ser	Ala	Phe	Phe	Ile	Asp	Ala	Thr	Val	Asn	Cys	Gly		
				145					150					155			
aag	ccg	att	gtg	ttc	gtt	ggc	tca	atg	cga	cct	tcc	acc	gca	atc	tct	531	
Lys	Pro	Ile	Val	Phe	Val	Gly	Ser	Met	Arg	Pro	Ser	Thr	Ala	Ile	Ser		
			160					165					170				
gcc	gat	ggc	cct	atg	aat	ttg	ctc	cag	gga	gtg	act	gtg	gcc	gct	gac	579	
Ala	Asp	Gly	Pro	Met	Asn	Leu	Leu	Gln	Gly	Val	Thr	Val	Ala	Ala	Asp		
		175					180					185					
aaa	cag	gct	aag	aac	cgc	gga	gca	cta	gtc	gtg	ctg	aat	gac	cgc	att	627	
Lys	Gln	Ala	Lys	Asn	Arg	Gly	Ala	Leu	Val	Val	Leu	Asn	Asp	Arg	Ile		
	190					195					200						
gtc	tct	gct	ttc	ttc	gct	aca	aag	aca	aat	gcg	aat	aca	atg	gac	act	675	
Val	Ser	Ala	Phe	Phe	Ala	Thr	Lys	Thr	Asn	Ala	Asn	Thr	Met	Asp	Thr		
205					210					215					220		
ttc	aag	gct	tat	gaa	caa	ggc	agt	ctt	ggc	atg	att	gtt	tca	aac	aag	723	
Phe	Lys	Ala	Tyr	Glu	Gln	Gly	Ser	Leu	Gly	Met	Ile	Val	Ser	Asn	Lys		
				225					230					235			
ccc	tac	ttc	tat	tat	ccg	gca	gtc	gag	cca	aac	gcg	aag	cac	gtt	gtt	771	
Pro	Tyr	Phe	Tyr	Tyr	Pro	Ala	Val	Glu	Pro	Asn	Ala	Lys	His	Val	Val		
			240					245					250				
cat	ctt	gac	gac	gtg	gat	gcg	atc	ccc	cgt	gtg	gat	att	ctc	tac	gct	819	
His	Leu	Asp	Asp	Val	Asp	Ala	Ile	Pro	Arg	Val	Asp	Ile	Leu	Tyr	Ala		
		255					260					265					
tac	gag	gac	atg	cat	agc	gac	tcc	ctt	cac	agt	gct	atc	aaa	aat	gga	867	
Tyr	Glu	Asp	Met	His	Ser	Asp	Ser	Leu	His	Ser	Ala	Ile	Lys	Asn	Gly		
	270					275					280						
gcc	aag	ggc	atc	gtg	gtc	gcc	ggc	gag	ggc	gca	ggt	ggt	atc	tcc	acg	915	
Ala	Lys	Gly	Ile	Val	Val	Ala	Gly	Glu	Gly	Ala	Gly	Gly	Ile	Ser	Thr		
285					290					295					300		
gac	ttt	agt	gat	acc	atc	gat	gag	att	gca	tcg	aag	cat	cag	att	ccc	963	
Asp	Phe	Ser	Asp	Thr	Ile	Asp	Glu	Ile	Ala	Ser	Lys	His	Gln	Ile	Pro		
				305					310					315			
att	atc	ctg	agc	cac	aga	acc	gtg	aac	gga	gaa	gtt	cct	act	gct	gat	1011	
Ile	Ile	Leu	Ser	His	Arg	Thr	Val	Asn	Gly	Glu	Val	Pro	Thr	Ala	Asp		
			320					325					330				
att	acg	ggt	gat	agc	gcg	aag	act	cgc	att	gca	agt	ggc	atg	tat	aac	1059	
Ile	Thr	Gly	Asp	Ser	Ala	Lys	Thr	Arg	Ile	Ala	Ser	Gly	Met	Tyr	Asn		

335	340	345	
ccc cag cag gcg cgc gtc ttg ctt gga cta ttg ctc gca gaa ggc aag			1107
Pro Gln Gln Ala Arg Val Leu Leu Gly Leu Leu Leu Ala Glu Gly Lys			
350	355	360	
aag ttt gag gat att cga act atc ttc gga aaa gct act gtt gcc			1152
Lys Phe Glu Asp Ile Arg Thr Ile Phe Gly Lys Ala Thr Val Ala			
365	370	375	
tagacccacg tcatatatta tgcccatact tgggaacact tgaaactgat agactaaatt			1212
aattatattg tcgtttgttg ccgg			1236

<210> 12  
 <211> 379  
 <212> PRT  
 <213> Penicillium citrinum  
  
 <220>  
 <221> misc\_feature  
 <222> (110)..(110)  
 <223> The 'Xaa' at location 110 stands for Pro, or Ser.  
  
 <400> 12

Met Arg Leu Leu Phe Asn Thr Leu Ala Val Ser Ala Leu Ala Ala Thr			
1	5	10	15
Ser Tyr Ala Ser Pro Ile Ile His Ser Arg Ala Ser Asn Thr Ser Tyr			
20	25	30	
Thr Asn Ser Asn Gly Leu Lys Phe Asn His Phe Asp Ala Ser Leu Pro			
35	40	45	
Asn Val Thr Leu Leu Ala Thr Gly Gly Thr Ile Ala Gly Thr Ser Asp			
50	55	60	
Asp Lys Thr Ala Thr Ala Gly Tyr Glu Ser Gly Ala Leu Gly Ile Asn			
65	70	75	80
Lys Ile Leu Ser Gly Ile Pro Glu Val Tyr Asp Ile Ala Asn Val Asn			
85	90	95	
Ala Val Gln Phe Asp Asn Val Asn Ser Gly Asp Val Ser Xaa Ser Leu			
100	105	110	
Leu Leu Asn Met Thr His Thr Leu Gln Lys Thr Val Cys Asp Asp Pro			
115	120	125	

Thr Ile Ser Gly Ala Val Ile Thr His Gly Thr Asp Thr Leu Glu Glu  
 130 135 140

Ser Ala Phe Phe Ile Asp Ala Thr Val Asn Cys Gly Lys Pro Ile Val  
 145 150 155 160

Phe Val Gly Ser Met Arg Pro Ser Thr Ala Ile Ser Ala Asp Gly Pro  
 165 170 175

Met Asn Leu Leu Gln Gly Val Thr Val Ala Ala Asp Lys Gln Ala Lys  
 180 185 190

Asn Arg Gly Ala Leu Val Val Leu Asn Asp Arg Ile Val Ser Ala Phe  
 195 200 205

Phe Ala Thr Lys Thr Asn Ala Asn Thr Met Asp Thr Phe Lys Ala Tyr  
 210 215 220

Glu Gln Gly Ser Leu Gly Met Ile Val Ser Asn Lys Pro Tyr Phe Tyr  
 225 230 235 240

Tyr Pro Ala Val Glu Pro Asn Ala Lys His Val Val His Leu Asp Asp  
 245 250 255

Val Asp Ala Ile Pro Arg Val Asp Ile Leu Tyr Ala Tyr Glu Asp Met  
 260 265 270

His Ser Asp Ser Leu His Ser Ala Ile Lys Asn Gly Ala Lys Gly Ile  
 275 280 285

Val Val Ala Gly Glu Gly Ala Gly Gly Ile Ser Thr Asp Phe Ser Asp  
 290 295 300

Thr Ile Asp Glu Ile Ala Ser Lys His Gln Ile Pro Ile Ile Leu Ser  
 305 310 315 320

His Arg Thr Val Asn Gly Glu Val Pro Thr Ala Asp Ile Thr Gly Asp  
 325 330 335

Ser Ala Lys Thr Arg Ile Ala Ser Gly Met Tyr Asn Pro Gln Gln Ala  
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Arg Val Leu Leu Gly Leu Leu Leu Ala Glu Gly Lys Lys Phe Glu Asp  
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Ile Arg Thr Ile Phe Gly Lys Ala Thr Val Ala  
 370 375

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Ser Gly Ala Pro Leu Leu Lys Ile Arg Glu Glu Lys Asn Ser Ser Leu  
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Pro Ser Ile Lys Ile Phe Gly Thr Gly Gly Thr Ile Ala Ser Lys Gly  
 35 40 45

Ser Thr Ser Ala Thr Thr Ala Gly Tyr Ser Val Gly Leu Thr Val Asn  
 50 55 60

Asp Leu Ile Glu Ala Val Pro Ser Leu Ala Glu Lys Ala Asn Leu Asp  
 65 70 75 80

Tyr Leu Gln Val Ser Asn Val Gly Ser Asn Ser Leu Asn Tyr Thr His  
 85 90 95

Leu Ile Pro Leu Tyr His Gly Ile Ser Glu Ala Leu Ala Ser Asp Asp  
 100 105 110

Tyr Ala Gly Ala Val Val Thr His Gly Thr Asp Thr Met Glu Glu Thr  
 115 120 125

Ala Phe Phe Leu Asp Leu Thr Ile Asn Ser Glu Lys Pro Val Cys Ile  
 130 135 140

Ala Gly Ala Met Arg Pro Ala Thr Ala Thr Ser Ala Asp Gly Pro Met  
 145 150 155 160

Asn Leu Tyr Gln Ala Val Ser Ile Ala Ala Ser Glu Lys Ser Leu Gly

165								170				175			
Arg	Gly	Thr	Met	Ile	Thr	Leu	Asn	Asp	Arg	Ile	Ala	Ser	Gly	Phe	Trp
			180					185					190		
Thr	Thr	Lys	Met	Asn	Ala	Asn	Ser	Leu	Asp	Thr	Phe	Arg	Ala	Asp	Glu
		195					200					205			
Gln	Gly	Tyr	Leu	Gly	Tyr	Phe	Ser	Asn	Asp	Asp	Val	Glu	Phe	Tyr	Tyr
	210					215					220				
Pro	Pro	Val	Lys	Pro	Asn	Gly	Trp	Gln	Phe	Phe	Asp	Ile	Ser	Asn	Leu
225					230					235					240
Thr	Asp	Pro	Ser	Glu	Ile	Pro	Glu	Val	Ile	Ile	Leu	Tyr	Ser	Tyr	Gln
				245					250					255	
Gly	Leu	Asn	Pro	Glu	Leu	Ile	Val	Lys	Ala	Val	Lys	Asp	Leu	Gly	Ala
			260					265					270		
Lys	Gly	Ile	Val	Leu	Ala	Gly	Ser	Gly	Ala	Gly	Ser	Trp	Thr	Ala	Thr
		275					280					285			
Gly	Ser	Ile	Val	Asn	Glu	Gln	Leu	Tyr	Glu	Glu	Tyr	Gly	Ile	Pro	Ile
	290					295					300				
Val	His	Ser	Arg	Arg	Thr	Ala	Asp	Gly	Thr	Val	Pro	Pro	Asp	Asp	Ala
305					310					315					320
Pro	Glu	Tyr	Ala	Ile	Gly	Ser	Gly	Tyr	Leu	Asn	Pro	Gln	Lys	Ser	Arg
				325					330					335	
Ile	Leu	Leu	Gln	Leu	Cys	Leu	Tyr	Ser	Gly	Tyr	Gly	Met	Asp	Gln	Ile
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